means for determining at a current node if a region of the image presented at said current node is obscured by regions represented by [at least one] any other node in said expression tree; and

means for modifying said expression tree in the event that the current node is partially or totally obscured.

REMARKS

Claims 1-32 are now presented for examination.

Claims 1, 8, 17 and 24 have been amended to define still more clearly what Applicant regards as his invention.

Claims 1, 8, 11, 17, 24 and 27 are the independent claims.

The title has been rewritten as required in paragraph 3 of the Office Action.

Claims 1-3, 5/1-3, 6-8, 17-19 and 22-24 were rejected under 35 U.S.C. § 102(b) as being anticipated by Australian patent document AU 9523362 A (Politis).

Claims 4, 5/4, 9-16, 20, 21 and 25-32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Politis.

Amended independent Claim 1 is directed to a method of optimizing an expression tree, wherein the expression tree is for compositing an image and comprises at least three nodes.

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Each of the nodes of the tree being either a graphical element or a graphical operator and having a region of the image represented by the nodes. The method comprising, for at least one node in the tree, the steps of first, comparing the region represented by the node to a region representation data structure corresponding to one or more regions represented by any other node in the expression tree; second, determining if the region represented by the node is totally or partially obscured by the one or more regions; and, thirdly, modifying the expression tree in the event that the region represented by the node is at least partially or totally obscured.

Politis is directed to a system method and language for compositing or creating images. The images typically comprise a plurality of graphical elements each including color and opacity information. The system utilizes operators having the graphical elements and operands in which the operators combine the operands according to a function defined by the operators, the color information, and the opacity information, to produce new graphical elements. One part of the system includes interpreting the language of parsing and executing a sequence of statements and forming an expression tree the nodes of which comprise a graphical element. Instructions are then derived from the tree. Another part permits the compositing of

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opaque locating active areas of graphical elements from the
nodes.

Applicant fails to find any teaching or suggestion in
Politis that the region represented by a particular node is
compared to a region representation data structure
corresponding to any other region in the expression tree, as
recited in Claim 1. Politis (page 10, lines 10-22) discusses
an operation whereby two nodes are confined to form a third
node resulting from an "over" operation being carried out on
the two nodes. Politis (page 12, lines 27 to 34) discusses
carrying out a number of optimization steps on the expression
tree.

In this connection, Politis (page 17, line 5 through
page 19, line 14) discusses the calculation of bounding boxes
of lead nodes whereby each bounding box is required to extend
over the combined areas of two lead nodes. The bounding boxes
are combined using the "in", "over" and "out" operations. A
bounding box minimization process is then carried out which
results in a bounding box which represents a portion of the
image or graphical element necessary for rendering the final
image. The process is carried out for each node of the
expression syntax tree. Politis (Figs. 1 to 4) illustrate
examples of the resulting region formed by the direct

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combination of two elements of an expression tree whereby the resulting region is dependent on the compositing operator of the parent node of the two child nodes which include those two elements. Figs. 5 to 9 illustrate the operation of the interpreter means of Politis whereby a series of instructions are carried out to combine several nodes to form the tree illustrated in Fig. 9.

Politis does not teach or suggest a step whereby one region is compared to a region representation data structure corresponding to one or more regions represented by any other node in the expression tree, as recited in Claim 1.

Further, page 19, lines 15 to 26 discloses reducing the size of the bounding boxes to detect when a first child node of a parent node is obscured by a second child node of the parent node. This is illustrated in Fig. 31 of Politis. However, Politis does not teach or suggest the particular feature of the present invention, as recited in Claim 1, whereby a region represented by a node is compared to a region representation data structure corresponding to one or more regions represented by any other node in the expression tree.

As described at page 8, line 37 to page 9 line 2 of the present application, each node of the expression tree receives from its parent node a region representation of one or

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more areas of the image. The region representation is compared to the region represented at the node to determine if the region represented by that node is obscured. Further, as described at page 9, line 13 of the present application, if a node is partly obscured by one or more regions represented by any other nodes in the expression tree, a clipping operator is applied to the node. Therefore, each node of the expression tree is essentially tested against every other node of the expression tree to determine whether it is obscured. This feature is not taught or suggested by Politis.

For at least the reasons set out above, Claim 1 is considered to be patentable over Politis.

Amended independent Claim 17 is an apparatus claim corresponding to Claim 1 and is thought to be patentable for the same reasons.

Amended independent Claim 8 and 24 recite features similar to those recited in Claims 1 and 17, and are considered to be patentable for the same reasons.

Independent Claim 11 is directed to a method of optimizing an expression tree for compositing an image, the expression tree comprising a plurality of nodes, each node comprising either a graphical element or a graphical operator and having a region of the image represented by the node. The

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method includes a step of returning to the graphical operator a second region representation of regions obscured by a sub-tree associated with a first operand.

Applicant traverses the rejection of Claim 11 based on the following reasons.

As acknowledged in the Office Action, <u>Politis</u> does not teach that the final region representation is to be returned to the parent node. Further, <u>Politis</u> does not teach or suggest the feature of returning to the graphical object a second region representation of regions <u>obscured</u> by a sub-tree associated with the first operand, as recited in Claim 11.

<u>Politis</u> (page 19, lines 15 to 30) teaches reducing the size of a bounding box to detect when a first child node of a parent node is obscured by a second child node of the parent node. Further, at this reference, <u>Politis</u> teaches eliminating the bounding box of a first child node depending on whether it is totally obscured by that of a second child node which is directly linked with the first child node. Therefore, there is no teaching or suggestion therein of returning to the graphical operator a second region representation of regions obscured by a sub-tree associated with the first operand. This feature is described at page 12, lines 36 to 37 of the present

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application, and provides a different optimization then that taught by <u>Politis</u>.

As discussed above, the bounding box described in <u>Politis</u> extends over the combined areas of only two child nodes having the same parent node. It is submitted, that this is different from the region which is returned to the graphical operator and represents regions obscured by a sub-tree associated with a first operand, as recited in Claim 11.

For at least the reasons discussed above, Claim 11 is considered to be patentable over <u>Politis</u>.

Claim 27 is an apparatus claim corresponding to Claim 11, and is through to be patentable for the same reasons.

A review of the other art of record has failed to reveal anything which, in Applicant's opinion, would remedy the deficiencies of the art discussed above as a reference against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other claims in this application are each dependent from one or another of the independent claims discussed above, and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the

individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

Applicant's undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,
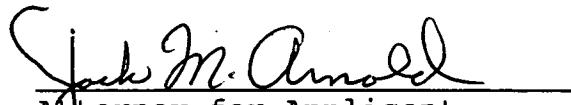
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